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EXAMINER

YU, LIHONG

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,667	Applicant(s) MAJIMA, TAICHI	
	Examiner LIHONG YU	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's amendment to the claim, received on January 04, 2010, with respect to the double patenting rejection in the office action on September 01, 2009, has been fully considered and is persuasive. The nonstatutory obviousness-type Double Patenting rejection of claim 6 has been withdrawn.
2. Applicant's arguments with respect to claim rejections under 35 U.S.C. 102 and 103 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 18 is objected to because of the following informalities:

Claim 18, line 2, "**protected to the redundant bit addition unit**" is not clear in meaning. For examination purposes, it is interpreted as "provided to the redundant bit addition unit". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 13, 20, 23 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The above independent claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, claims 13, 20, 23 and 24 recite “wherein the redundant bit unit operates to select as a redundant bit to be added a bit being common to both symbol data located at a positive position and symbol data located at a negative position out of the Gray coded 4-level symbols, the positive position and the negative position being away in deviation furthest from each other”, which is not disclosed in the original application, therefore, it is considered a new matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Tanaka et al (US 5,677,681) and Vermesse (US 4,984,191).

Consider claims 13, 20, 23 and 24:

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Chung discloses a transmission device (*see Chung at Fig. 1 and col. 2, lines 30-33, where Chung describes a transmitter embodiment of an invention; see Fig. 2 and col. 5, lines 27-47, where Chung describes a corresponding receiver that performs the inverse function of the transmitter*) comprising:

- a redundant bit addition unit for adding a redundant bit of one bit to each of specific bits to be protected to generate coded data, the specific bits being selected out of supplied data (*see Chung at Fig. 1 and col. 4, lines 10-36, where Chung describes that the more important data of the received data is input to channel encoder 121 which adds redundant bits $r1$ to the data bits $m1$ to generate $m1+r1$ data bits, since $m1$ is number of data bits and $r1$ is number of redundant bits, $m1$ might be 1 and $r1$ might be 1, as is shown at Fig. 5, constellation (A)*); and
- a modulation unit for generating a modulation wave signal by modulating symbol data in accordance to a Gray code sequence (*see Chung at col. 4, lines 37-68, where Chung describes that the coded output from the channel encoder 121 is provided to modulator 150; see Chung at col. 2, lines 20-28, where Chung describes quaternary amplitude modulation (QAM); see Fig. 5, constellation (A), where Chung shows that any pairs of nearest-neighbor symbols in the constellation differ in only a single bit position, that is, Gray code*), the symbol data being obtained as a unit of 2 bits consisting of each bit and its redundant bit for the specific bits to be protected and a unit of 2 bits for the other data bits, on the basis of the coded data generated by the redundant bit addition unit, to send the generated modulated wave signal (*see Chung at Fig. 1 and col. 4, lines 10-36, where Chung describes that the encoded more*

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important data ($m1+r1$) and less important data ($m2+r2$) are provided to a multiplexer 140, when $m1=1$, $m2=1$ and $r1=1$, $r2=1$),

However, Chung does not specifically disclose (1), the above modulation is 4-value FSK, and (2), selecting as a redundant bit to be added a bit being common to both symbol data located at a positive position and symbol data located at a negative position out of the symbols, the positive position and the negative position being away in deviation furthest from each other.

Regarding (1) above, Tanaka teaches a 4-value FSK (*see Tanaka at Fig. 3B, Fig. 7 and col. 9, lines 15-36, where Tada describes a 4-value FSK modulation in which quaternary signals '00', '01', '11' and '10' is used*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Thapar, and to have multi-valued FSK, as taught by Tanaka, thus allowing for reduction in size and power consumption, as discussed by Tanaka (*see Tanaka at col. 3, lines 16-25*).

Regarding (2) above, Vermesse teaches selecting as a redundant bit to be added a bit being common to both symbol data located at a positive position and symbol data located at a negative position out of the symbols, the positive position and the negative position being away in deviation furthest from each other (*see Vermesse at the Abstract, where Vermesse describes selecting a redundant bit which is common both to the more significant bits and the less significant bits*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to select as a redundant bit to be added a bit being common

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to both symbol data located at a positive position and symbol data located at a negative position out of the symbols, as taught by Vermesse, thus making detecting the last recorded value easy and quick, as discussed by Vermesse (*see Vermesse at col. 1, lines 19-26*).

Consider claim 14:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Chung discloses each of the specific bits to be protected comprises flag data (*see Chung at col. 6, lines 25-52, where Chung describes that each subset of data has an identifier that is a two bit pattern*).

Consider claim 15:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Although Chung does not specifically disclose the supplied data includes bits for error check and the specific bits to be protected include the bits for error check., it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to include bits for error check, as is known in the art to help correct bit errors.

Consider claim 16:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Chung does not specifically disclose the supplied data includes bits for error correction and the specific bits to be protected include the bits for error correction.

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It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to include bits for error correction, as is known in the art to improve data quality.

Consider claim 17:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Chung discloses the number of the specific bits to be protected is less than the number of the other bits not to be protected (*see Chung at Fig. 5 and col. 6, lines 1-15, where Chung discloses the percentage of more important data varying from 37.5% to 62.5%*).

Consider claim 18:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Chung discloses the data provided to the redundant bit addition unit is data whose high and low significant levels are predetermined and the redundant bit addition unit operates to add the redundant bits to data having a higher significant level (*see Chung at Fig. 1 and col. 4, lines 10-36, where Chung describes that the more important data of the received data is input to channel encoder 121 which adds redundant bits $r1$ to the data bits for error protection*).

Consider claim 19:

Chung in view of Tanaka and Vermesse discloses the transmission device according to claim 13 above. Chung discloses the supplied data represents a plurality of pieces of information, and the redundant bit addition unit operates for respective ones of the plurality of pieces of

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information to add the redundant bit data to each of the specific bits to be protected to generate the coded data (*see Chung at col. 4, lines 10-36, where Chung describes that the more important data of the received data is input to channel encoder 121 which adds redundant bits $r1$ to the data bits $m1$ to generate $m1+r1$ data bits, since $m1$ is number of data bits and $r1$ is number of redundant bits, $m1$ might be 1 and $r1$ might be 1*).

Consider claim 21:

Chung in view of Tanaka and Vermesse discloses the reception device according to claim 20 above. Chung discloses the demodulation unit demodulates the received signal by converting the received signal into a signal of a voltage corresponding to a frequency of the received signal, and the symbol decision unit performs the symbol decision by comparing the voltage of the signal, which has been demodulated by the demodulation unit, with preset threshold values (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes demodulator 350 and decoders 331, 332 and 310*).

Consider claim 22:

Chung in view of Tanaka and Vermesse discloses the reception device according to claim 20 above. Chung discloses the bit data generated by the bit conversion unit is data in which bits are arranged such that high and low of significance levels thereof are predetermined and the bit data having the high significance level is added with the redundant bit, and wherein the data recovery unit deletes the redundant bit added to the bit data having the high significance level (*see Chung at col. 5, lines 40-47, where Chung discloses that the decoder provides the inverse function of the encoder of the transmitter to provide the received signal*).

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Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIHONG YU whose telephone number is (571) 270-5147. The examiner can normally be reached on 8:30 am-7:00 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lihong Yu/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611